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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,045	11/04/2003	Michael G. Adlerstein	RTN2-155PUS	5518
22494	7590	05/13/2005	EXAMINER	
DALY, CROWLEY, MOFFORD & DURKEE, LLP SUITE 301A 354A TURNPIKE STREET CANTON, MA 02021-2714			PRUCHNIC, STANLEY J	
		ART UNIT	PAPER NUMBER	
		2859		

DATE MAILED: 05/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/701,045	ADLERSTEIN, MICHAEL G.	

  

Examiner	Art Unit	
Stanley J. Pruchnic, Jr.	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 02/22/2005.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 5,6,11-14 and 18-21 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 5,6,11-14 and 18-21 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 22 February 2005 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 4/11/05 (2sheets).

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities:

In the paragraph labeled [0019], as amended on 01/19/05, in each of lines 3 and 5, the subscripts in each occurrence of “P<sub>rf,.tunrer</sub>”, i.e. the subscript “rf,.tunrer”, should be deleted and replaced therefor by the subscript --rf,tuner-- in order to correct the spelling.

Appropriate correction is required.

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### *Claim Objections*

3. Claims 5, 11, 14, 18 and 21 are objected to because of the following informalities:

- a. In Claim 5, Line 24, “the transistor” lacks antecedent basis.
- b. In Claim 5, in Line 24, perhaps the word “such” after the phrase “an output electrode of the transistor,” should be deleted and replaced therefor by the definite article --said-- or --the-- in order to more clearly describe the invention.
- c. In Claim 5, in Line 25, perhaps the word “such” after the phrase “a control signal fed to” should be deleted and replaced therefor by --said-- or --the-- in order to more clearly describe the invention.
- d. In Claim 11, in Line 9, perhaps the word “such” after the phrase “an output electrode of the transistor,” should be deleted and replaced therefor by the definite article --said-- or --the-- in order to more clearly describe the invention.

- e. In Claim 11, in Line 10, perhaps the word “**such**” after the phrase “a control signal fed to” should be deleted and replaced therefor by --**said**-- or --**the**-- in order to more clearly describe the invention.
- f. In Claim 14, in Line 3, perhaps the word “**such**” before “transistor,” should be deleted and replaced therefor by --**said**-- or --**the**-- in order to more clearly describe the invention.
- g. In Claim 18, in Line 11, perhaps the word “**such**” after the phrase “an output electrode of the transistor,” should be deleted and replaced therefor by the definite article --**said**-- or --**the**-- in order to more clearly describe the invention.
- h. In Claim 18, in Line 12, perhaps the word “**such**” after the phrase “a control signal fed to” should be deleted and replaced therefor by --**said**-- or --**the**-- in order to more clearly describe the invention.
- i. In Claim 21, in Line 2, perhaps the word “**such**” before “transistor,” should be deleted and replaced therefor by --**said**-- or --**the**-- in order to more clearly describe the invention.
- j. In each of Claims 11 and 21, perhaps replace every occurrence of “such” with --**said**-- in order to clearly describe the invention, because “such” is not definitely claiming the same element.
- k. In the present instance, each of the independent claims 5, 11 and 18 recites the broad recitation “an active semiconductor device” and the claim also recites “the transistor” or “a transistor” which is the narrower statement of the range/limitation. Furthermore, in the present instance, each of the independent claims 11 and 18 recites the broad recitation “a thermal sensitive device” and the claim also recites “a resistor” which is the narrower statement of the range/limitation. Perhaps just recite the narrower limitation only in each instance in order to more clearly describe the invention.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 5, 11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5444219 A (KELLY, Brendan P.) in view of BURKE et al. (U. S. Patent No. 6,091,309 A, hereinafter BURKE).

**With respect to Claim 5:** KELLY discloses a circuit 100 for determining temperature of an active semiconductor device (power MOSFET 11; Col. 10, Lines 7-38), comprising:

(A) a semiconductor substrate 10 (Col. 4, Lines 45ff) having thereon the active device 11;

(B) a bridge circuit (Col. 7, Line 57) comprising:

(i) a first thermal sensitive device R2 disposed in thermal contact with an electrode of the active device, such first thermal sensitive device having a pair of terminals, a first one of the pair of terminals being connected to a first node (at rail 1; Fig. 4) and a second one of the pair of terminals being connected to a second node (4);

(ii) a second thermal sensitive device R1 disposed in thermal contact with the electrode of the active device, such second thermal sensitive device having a pair of terminals, a first one of the pair of terminals being connected to a third node (5) and a second one of the pair of terminals being connected to a fourth node (at rail 2; Fig. 4);

(iii) a third thermal sensitive device R4 disposed in thermal contact with the substrate, such third thermal sensitive device having a pair of terminals, a first one of the pair of terminals being connected to the second node (4) and a second one of the pair of terminals being connected to the fourth node (at rail 2; Fig. 4);

(iv) a fourth thermal sensitive device R3 disposed in thermal contact with the substrate, such fourth thermal sensitive device having a pair of terminals, a first one of the pair of terminals being connected to the first node (at rail 1; Fig. 4) and a second one of the pair of terminals being connected to the third node (5);

(v) a voltage potential connected between the first node (at rail 1) and the fourth node (at rail 2);

(vi) an output provided by the second node (4) and the third node (5).

**With respect to Claim 11 and 18:** KELLY discloses a circuit for determining temperature of an active semiconductor device 11, comprising:

(A) a semiconductor substrate 10 (Col. 4, Lines 45ff) having thereon the active device 11;

(B) a Wheatstone bridge circuit (Col. 7, Line 57) having in each of four branches (Fig. 4) thereof a thermal sensitive device, one pair (R1 and R2) of such thermal sensitive devices being in thermal contact (Fig. 7; at P1) with an electrode of the active device 11;

wherein the thermal sensitive devices are resistors;

wherein the active device is a transistor; and,

**further regarding Claim 18,** KELLY discloses another pair (R3 and R4) of such thermal sensitive devices is in thermal contact with the substrate at position P2.

KELLY, to summarize, discloses all the limitations as claimed by Applicant in Claims 5, 11 and 18, as described above, but KELLY does not explicitly disclose the circuit including a tuning circuit coupled to an output electrode of the transistor, such

tuning circuit having a tunable element controlled by a control signal fed to such tunable element.

BURKE discloses an active semiconductor device 18 (Fig. 4), being a transistor, and including a tuning circuit (tank circuit of an oscillator) coupled to an output electrode E of the transistor, such tuning circuit having a tunable element (varactor 34) controlled by a control signal ( $V_{tune}$ ) fed to such tunable element.

BURKE further discloses that it is advantageous to provide a tuning circuit including the transistor and varactor in combination in order to provide a tunable oscillator having high frequency and low phase noise (Col. 3, Lines 4-65).

BURKE is evidence that ordinary workers in the field of 1.8 GHz telephone communication would recognize the benefit of using a tuning circuit as taught by BURKE with the transistor of KELLY in order to provide a tunable oscillator having high frequency and low phase noise.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the tuning circuit of BURKE with the transistor of KELLY in order to provide a tunable voltage controlled oscillator having high frequency and low phase noise as taught by BURKE.

7. Claims 6, 12-14 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over KELLY in view of BURKE and further in view of MA *et al.* (U. S. Patent No. 5,912,595 A, hereinafter MA).

KELLY in view of BURKE, to summarize, discloses or suggests all the limitations as claimed by Applicant in Claims 6, 12-14 and 19-21, as described above in Paragraph 6 as applied to Claims 5, 11 and 18 further including the limitations wherein the output provided by the Wheatstone bridge provides a measure of a temperature difference between the temperature of the transistor and ambient temperature as claimed by Applicant in Claims 13 and 20.

**Regarding Claims 6, 12 and 19:** The combination of KELLY and BURKE as described above, does not explicitly disclose the circuit further including a processor responsive to a voltage produced at an output of the Wheatstone bridge circuit and a signal representative of power fed to the transistor; and further regarding **Claims 14 and 21:** The combination of KELLY and BURKE as described above, does not explicitly disclose the circuit wherein the processor produces the control signal to maximize power fed to the transistor and minimize power dissipated by such transistor.

MA discloses a processor responsive to a temperature transducer signal from temperature probe 14 in order to provide compensation for temperature of a voltage controlled oscillator 12.

MA further discloses that it is advantageous to include a processor 22 in order to benefit from adjustability in maintaining the VCO at a desired value instantly adjusting for temperature changes.

MA is evidence that ordinary workers in the field of oscillators would recognize the benefit of using a processor as taught by MA for generating the control signal of the combination of KELLY and BURKE in order to provide controllable values. Absent criticality, the particular values of the control signal would have been an obvious modification, i.e. to maximize power fed to the transistor and minimize power dissipated in the transistor in order to match the impedance of the transistor for efficient operation.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the processor for the undisclosed source of the control signal of the combination of KELLY and BURKE in order to optimize and control the oscillator in an efficient manner at a desired temperature stabilized frequency as taught by MA.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in a form PTO-892 and not mentioned above

disclose related temperature-compensated oscillators including transistors and tunable elements.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stanley J. Pruchnic, Jr., whose telephone number is **(571) 272-2248**. The examiner can normally be reached on weekdays (Monday through Friday) from 7:30 AM to 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. F. Gutierrez can be reached at **(571) 272-2245**.

The **Official FAX** number for Technology Center 2800 is **(703) 872-9306** for **all official communications**.

Any inquiry of a general nature or relating to the status of this application or proceeding may be directed to the official USPTO website at <http://www.uspto.gov> or you may call the **USPTO Call Center** at **800-786-9199** or 703-308-4357. The Technology Center 2800 Customer Service FAX phone number is (703) 872-9317.

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Private PAIR provides external customers Internet-based access to patent application status and history information as well as the ability to view the scanned images of each customer's own application file folder(s).

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SJP  
Stanley J. Pruchnic, Jr.  
5/11/05

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